

AMERICAN PILOTS' ASSOCIATION

GUIDELINES FOR BRIDGE RESOURCE MANAGEMENT COURSES FOR MARINE PILOTS

October 5, 1993

Introduction

Bridge Resource Management (BRM) generally refers to practices employed in the management of bridge operations to maximize the effective utilization of all resources, including personnel, equipment and information, available for the safe navigation of the ship. The essence of BRM is a safety attitude and management approach that facilitates communication, cooperation, and coordination among the individuals involved in a ship's navigation.

Efforts are currently underway to introduce BRM concepts into ship operations through training courses for bridge personnel. Because BRM is an outgrowth of Cockpit Resource Management (CRM), which was developed in the aviation industry during the late 1970's and early 1980's, BRM courses have typically borrowed heavily from the well-established CRM training programs. The goal of most CRM training has been to teach flight crews how to optimize communication and coordination through the use of a more "team" oriented approach to their tasks.

Effective communication and coordination is as important on the bridge of a ship as it is in the cockpit of an airplane. There is a significant difference between navigating a ship and flying an airplane, however. For the vast majority of large commercial ships, a compulsory pilot who is not a member of the ship's crew plays an important, and many would suggest the most important, role in the ship's navigation through the waters and in the operations involving the greatest demands and risks. This pilot is expected to exercise independent, professional judgment (which may conflict with the desires of the ship's master and crew), has critical information (local knowledge) that is not available to the ship's bridge crew, and in many cases must contend with serious language and cultural barriers between the pilot and the crewmembers. Enhancing teamwork under these circumstances poses challenges that are not addressed in a typical CRM course.

Although many of the existing, first-generation BRM courses in the United States include the interaction of the master and bridge crew with the pilot, these courses were designed for, and are primarily taken by, ship crewmembers, not pilots. As a result, these courses do not provide pilots with the most suitable or effective training in BRM.

* The term "pilot" as used in this document means a compulsory, licensed pilot who is not a member of a ship's crew but who comes aboard the ship and provides pilotage services for a specific movement or operation.

If BRM and BRM training is to make a significant contribution to improving navigation safety, BRM concepts must address the role of the pilot, and pilots should receive BRM training through courses that are specifically designed for pilots. Such BRM training courses for pilots should meet the criteria set forth below.

1. Course Should Be Designed Specifically for Pilots.

The course should focus on the functions, tasks, experiences and needs of pilots. In particular, the course should address the special problems involved in working on different types of ships and communicating with ship personnel having varying degrees of English speaking skills, training (including BRM training), qualifications, and commitment to safety.

2. Objectives of Course.

In general terms, the objective of the course should be to help pilots use the skills and training they already possess in ways that maximize the safety performance of all the individuals on the bridge. Specifically, the course should seek to have each participant gain the following:

- a. an increase in "situational awareness" skills;
- b. improved abilities to foresee and prevent potential errors and to detect developing error chains and intervene before an accident becomes unavoidable (error trapping);
- c. a more developed concept of the appropriate roles of teamwork and leadership in the navigation of a ship;
- d. a greater regard for the importance of communication, an understanding of the common barriers to effective communication, and an awareness of how BRM practices can improve communication; and
- e. an enhanced ability to evaluate quickly the resources available for each pilotage assignment and to adjust practices to utilize those resources most effectively.

3. Length of Course.

The course should be two days (14-16 hours). An acceptable course might be expanded beyond two days or be offered in conjunction with other areas or types of instruction, provided that the focus of the course remains on BRM.

4. Curriculum.

The course should include instruction/training in the following subject areas:

- a. situational awareness
- b. error chains (error detection and error trapping)
- c. human factors
- d. dynamics of group performance
- e. special problems in pilot-bridge crew integration
- f. communication and communication skills
- g. command/leadership skills.

5. Class Size and Instruction Methods.

Because one of the primary subjects in a BRM course should be communication and inter-personal skills, class size should be between 5 and 25 individuals. Interactive instruction methods, such as a "workshop" approach involving discussion groups, exercises, etc. are encouraged. Case studies are particularly appropriate for BRM programs; however care should be taken to ensure that the discussion and analysis of cases retains the BRM focus.

6. Sponsors and Instructors.

An acceptable BRM course for pilots would be one be offered by a recognized maritime academy, training center or other school or institute that is engaged in the business of offering training and instruction to licensed marine officers. Instructors for pilot BRM courses should have specific training in BRM concepts and teaching methods. At least one instructor in a course should have experience as a pilot on large, foreign-flag commercial ships.

7. Use of a Simulator.

A simulator is not necessary for a pilot BRM course. Simulator exercises could be offered in conjunction with a BRM course, however. In addition, simulator exercises for pilots who have had BRM training or are in the process of receiving BRM training should involve practice in, and peer review of, a pilot's implementation of BRM concepts.

AMERICAN PILOTS' ASSOCIATION
GUIDELINES FOR RENEWAL COURSES IN
BRIDGE RESOURCE MANAGEMENT
FOR MARINE PILOTS
(Revised 11/ 3/ 2000)

Introduction

In October, 1993, the American Pilots' Association recommended that all APA member pilots should take an APA-approved course in Bridge Resource Management for Marine Pilots (BRM-P) and should take a renewal BRM-P course at least once every three years. Guidelines for BRM-P courses were established at the same time, and a number of courses have been approved by the APA since then. On November 3, 2000 the 1993 Resolution was amended to change the recommended renewal cycle from three to five years.

This program has been successful. The APA estimates that over 95% of its member pilots have taken an initial BRM-P course. Many of these pilots are approaching, or have already reached, the end of the first renewal cycle. They are ready for a renewal BRM-P course. It is clear that simply repeating a previous BRM-P course would not be worthwhile. Consequently, there is a need for the schools with APA-approved BRM-P courses to develop and offer courses specifically designed for pilots who have already taken a BRM-P course, and the APA would encourage the schools to offer separate initial and renewal courses, each of which would be APA-approved.

Schools with an APA-approved BRM-P course are presumed to recognize that a BRM course for pilots should differ in certain important respects from a BRM course for ships' crews. APA member pilots expect that an APA-approved BRM-P course, whether initial or renewal, will address the role and unique challenges of the pilot. In this regard, course providers should consult the APA's October 5, 1993 "Guidelines for Bridge Resource Management Courses for Marine Pilots." The APA anticipates that renewal courses will meet both the 1993 Guidelines as well as the present guidelines for renewal courses.

Obviously, a renewal course will require a somewhat different approach than an initial course. For example, instructors in a renewal course should assume that the pilots in the course have an understanding of basic BRM concepts, such as situational awareness, error chains, and human factors affecting communication, cooperation and pilot-bridge crew integration. As a result, those concepts can be reviewed, expanded, and updated with new information and theories, but there would be no need to repeat the exercises or case histories used to introduce those concepts. Essentially, a renewal course should focus on developments in the BRM field over the preceding five years.

The APA invites the submission of, and will give approval for, renewal courses meeting the following guidelines:

1. Course Should be Designed Specifically for Pilots Who Have Already Had a BRM-P Course.

The course should assume that the participants already have had a course in BRM-P and are familiar with basic BRM concepts and how they apply to the specific functions, tasks, experiences, and needs of pilots.

2. Objectives of Course.

In terms of the knowledge and benefits to be gained by the participants, the objectives of the course are essentially the same as for an initial BRM-P course. In addition, the participants' understanding of BRM should be expanded through instruction in developments in the subject of BRM during the preceding five years as a result of accidents, research (in such things as fatigue and cultural and language barriers), developments in technology and information resources and regulatory changes.

3. Length of Course.

The course should be two days (14-16 hours), although an acceptable course might be expanded beyond two days, provided that the focus remains on BRM. Additional training in other areas of professional development might be offered in conjunction with the BRM-P course.

4. Curriculum.

The course should include instruction/training in the subject areas identified in the APA Guidelines. Basic BRM concepts such as situational awareness, error chains, special problems of pilot-bridge crew integration, and human factors affecting individual and group performance, can be reviewed and then updated or supplemented with more recent developments in those subject areas. Particular attention could be given to:

- a. Developments in technology and information resources, e.g.:
 - electronic charts, ECDIS, and NOAA products,
 - integrated bridge systems and new bridge lay-outs,
 - GPS/DGPS systems (shipboard and pilot supplied),
 - VTS systems, traditional and those using Automated Independent Surveillance (AIS),
 - advanced tug designs (e.g., tractor tugs) and procedures
 - advanced shipboard control systems (such as azipod propulsion)
- b. Reports of accidents from preceding five years;
- c. APA positions on "The Respective Roles and Responsibilities of the Pilot and the Master, "The Master-Pilot Information Exchange," and other relevant matters;

- d. Research on fatigue, cognitive science, and other human factors;
- e. Regulatory requirements governing respective duties of master and bridge crew and pilot (e.g., STCW, SOLAS, 33 CFR Parts 164 and 165);
- f. New regulations possibly requiring a change in bridge procedures;
- g. Potential impact of ISM Code and STCW measures on the competence and operations of masters and bridge crews; and
- h. Positions and proposals of other organizations on master-pilot interaction, bridge team management, bridge procedures with pilot aboard, etc.

5. Class Size and Instruction Methods.

Class size should be between 5 and 30 individuals. Although recent developments in BRM matters, such as research in human factors, changes in regulatory requirements, and technological advances, may justify more lecture-type instruction than would be advisable for initial BRM-P courses, a significant portion of a renewal BRM-P course should be conducted with interactive instruction methods and encourage discussion. This helps to ensure that the subject matter maintains its relevancy to the pilot experience. Case studies using accident reports are particularly appropriate, just as they are for initial BRM-P courses.

6. Sponsors and Instructors.

A renewal BRM-P course should be offered by a recognized maritime academy, training center or other school or institute or an individual engaged in the business of offering training and instruction to licensed marine officers. Instructors for BRM-P courses should have specific training in BRM concepts. In addition, an instructor should have either professional training as a facilitator in workshop type instruction methods or have experience as a pilot on large, foreign-flag commercial ships. A licensed mariner, former naval officer, or Coast Guard active duty or retired officer with neither training as a workshop facilitator nor experience as a pilot on foreign-flag commercial ships would not ordinarily be an acceptable instructor.

7. Use of a simulator.

A simulator is not necessary for a renewal BRM-P course, *although simulation may enhance the understanding of BRM-P concepts*. Simulator exercises could be incorporated into a renewal course or offered in conjunction with such a course, however. Ideally, such simulator exercises should be conducted with the actual or similar ships' crews that the pilots would encounter in their pilotage activities or with pilots playing the roles of such crew members. Simulator exercises could cover, among other things, bridge organizational skills and task allocation in emergency situations or difficult navigational scenarios.

THE AMERICAN PILOTS' ASSOCIATION

The Master-Pilot Information Exchange: A Best Practices Summary*

1. Master-Pilot Conference

- Each pilotage assignment should begin with a conference between the pilot and the master.
- The initial conference is an opportunity not only to exchange information that the pilot and master each needs, but also for the pilot and the master to establish an appropriate working relationship.
- The conference should convey, and be consistent with, the principle that the pilot and the master/bridge crew each has an important role in the navigation of the vessel.
- The amount and subject matter of the information to be exchanged in the initial conference should be determined by the specific navigation demands of the pilotage operation.
- For some vessel movements, particularly those involving a long run or difficult maneuvers at the beginning of the movement, not all relevant information must, or should, be exchanged in the initial conference; additional information can be exchanged as the movement proceeds.

2. Pilot's Information Card ("MPX Card")

- Pilot groups should consider developing information cards (MPX Cards) for use by their members.
- The pilot should give the card to the master at the time of the initial conference and use it as the basis for discussion during the conference.
- The card should supplement, not substitute for, the master-pilot information exchange.
- There should be a separate card for outbound and inbound movements, also for shifting operations or different pilotage areas, if appropriate.
- The card should include information or instructions specific to navigation in the local pilotage area; subjects that might be addressed include:
 - radio channels to be monitored;
 - posting of anchor watch/lookout (beyond the requirements of the Rules of the Road); and
 - local navigation requirements or restrictions (tug escorts, speed limits, one-way traffic areas, etc.).

* Adopted by the Board of Trustees of the American Pilots' Association on October 8, 1997.